

Work Order ID 83685**83685***

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Item ID: D6104-003
Revision ID:
Item Name: Round Billet, 17-4

Accept

N900040100

Setup Start ***NS1***
Stop ***NS2***

Start Date: 23/04/2012 Start Qty: 10.00
Required Date: 07/05/2012 Req'd Qty: 10.00

10
10

Cust Item ID:
Customer:

Reference:

Approvals: Process Plan: MLJ Date: 12/04/24 Tooling: Date:
QC: Date: SPC (Y/N): Date:

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D6104	Rev B

100 PURCHASING 0.00

100

Purchasing

Memo

0.00

Purchasing

Issue P/O: 16815 a)Description: S.S round billet b) Ø3.25" x
3.80" long) Tolerance on all dimensions are +0.030"/-0.000"d) Material:
17-4PH Stainless steel (Ams 5643 or Aisi 630)e)One blank makes 2 partsf)
Material certification required

OK 12/04/24 (10)

110

Receive & Inspect for Damage & Mat'l Certs

0.00

110

Packaging

Memo

0.00

Packaging

Ensure material certification is attached

OK 12/04/24 (10)

120

QC6- Inspect dimensions to drawing

0.00

120

QC

Memo

0.00

Quality Control

Ensure Material certification comply to Dwg D6104

OK 12/05/03 10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 83685

83685

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Setup Start ***NS1***
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Start Date: 23/04/2012 Start Qty: 10.00 ***10***
Required Date: 07/05/2012 Req'd Qty: 10.00 ***10***

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130 Identify as per dwg & Stock Location: **MAT43** 0.00

130

Packaging

Memo

0.00

Packaging

140 QC21- Final Inspection - Work Order Release 0.00

140

QC

Memo

0.00

Quality Control

12/5/3 *[Signature]*
H12-05-3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 83685

83685

Parent Item: D6104-003

D6104-003

Parent Item Name: Round Billet, 17-4

Start Date: 23/04/2012

Required Date: 07/05/2012

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP B: 01.09.04Revised Step 2 SM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-003P		Purchased	No			110	Each	0.0000	1	10			

D6104-003P

17-4 SS Roundbar 3.25"OD

**

Signature

(10)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

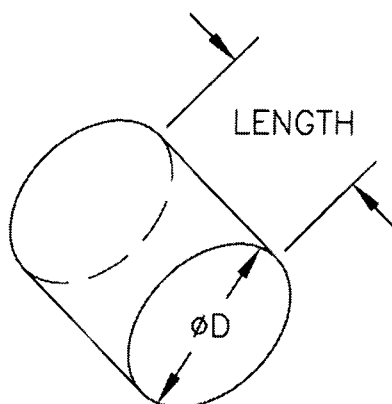


DESIGN [Signature]	DRAWN BY [Signature]	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

SPECIFICATION CONTROL DRAWING



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 83685 MLC
12/04/24

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 1

Shipment No:1290876

Ship From: A. M. Castle & Co. (Canada) Inc. MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 30-APR-2012	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 1290876-2	

Shipment Details	Final Destination Branch - MON
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Order No 2157373	Line No 1	Item No 42470.MO	Description 3.2500.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 3.8 IN (+ .0620/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643				
Purchase Order No 16815		Part Number YOUR ITEM NUMBER: D6104-003		Ordered Qty 10.00 PCS		Invoice Qty 10.00 PCS	
Details							
Delivery No. 117575372	Mill	Heat Number G17606	Mech Id	PCS 10	Width (IN)	Length (IN)	Shipped Qty(LBS) 89.33

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.	
We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.	
Reviewed by Authorized Castle Metals Representative:	Date: Name:

Castle Metals FP

HEAT NUMBER G 17606
MECHANICAL ID _____
ITEM CODE 42470
LOT NUMBER _____
PO NUMBER 96669
RECEIPT DATE 7-5-2011
SUPPLIER DU TO KUMPR
SPECIFICATION _____
LCS ND
COMMENT _____
APPROVED PD



Certificate of Test

HEAT G17606 ORDER 620809/ 09 BOL 0212672 * CERTIFICATION * 06/29/11

SHIP TO:
A. M. CASTLE METALS
3400 NORTH WOLF ROAD

FRANKLIN PARK 601310000

----- YOUR ORDER & DATE -----
96669 6/29/11 CUST# 0254001 CUST TAG#42470

----- ITEM DESCRIPTION -----
GRADE 17-4 Ship Condition CONDA
Size 17-4 RND HRART CONDA 3.2500 x 144.000 RL
Country of Melt: UNITED STATES Country of Mfg.: UNITED STATES
NAFTA Country of Origin is Country of Melt
No weld repair
Free of mercury contamination, Free of radiation contamination
No WEEE relevant substances; Meets EU electrical ROHS

Total Bundles 1 Total Weight 2490

WO 2022921 Bundles: 1A

----- SPECIFICATIONS -----
THE PRODUCTS LISTED ON THIS MILL TEST REPORT SATISFY PREFERENCE CRITERION B
AS DEFINED IN ARTICLE 401 OF THE NORTH AMERICAN FREE TRADE AGREEMENT.
AMS 2303F AMS 5643R
ASME SA182 E07, A07-09, E10 ASME SA564 E10
ASTM A484 11 ASTM A564 10 Type 630
DFARS 252.225.7014 6/05 Reduction Ratio 3:1 minimum
UNS S17400, AISI 630 No weld repair
Free of Mercury Contaminatio AM Castle 3174-10 R12
H900 Capability sample aged @ 900F/1hr/AC then tensile and HRC tested.

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 336 HB Hardness as tested 421 HB
Hardness as shipped 036 HRC Hardness as tested (45 HRC)
Grain size 6.0 Tensile strength,KSI (MPa) 205.0 (1413)
Micro OK 0.2% Yield Strngth,KSI(MPa) 179.4 (1237)
Intergranular corrosion
Macro OK Elongation % in 4D 13.5
Reduction of area % 42.1
Ferrite .0

----- CHEMICAL COMPOSITION -----
Carbon (C) .022 Manganese (Mn) .800
Phosphorus (P) .021 Sulphur (S) .023
Silicon (Si) .250 Chromium (Cr) 15.430
Nickel (Ni) 4.200 Cobalt (Co) .050
Copper (Cu) 3.720 Moly (Mo) .260
Nitrogen (N) .029 Columbium (Cb) .240
Titanium (Ti) .010 Aluminum (Al) .010
Tin (Sn) .004 Boron (B) .003
Tantalum (Ta) .010 Vanadium (V) .060
Columbium/
Tantalum (Cb+Ta) .250
Iron (Fe) Balance
Frequency .000 Severity .000
Melt Practice EAF
Refining Practice AOD
De-long Ferrite

Knowingly & willfully falsifying or concealing a material act on this form,
or making false, fictitious or fraudulent statements or representations
herein could constitute a felony punishable under federal statutes.
We hereby certify that the test results shown in this report are correct and
accurate as contained in the records of the company and are in compliance
with the specifications, codes, and standards listed above.

M.F. Marcanio, Quality Manager